Beside-the-Press Granulators
6.5 x 8, 6.5 x 12, and 6.5 x 16

Models Covered:
Seven, 65, 6 ½, M65

Part Number: MAN-CA070499
Bulletin Number: GRN1-600
Effective: August 1, 2012

an ACS Group company

Write Down Your Serial Numbers Here For Future Reference:

_____ _____

_____ _____

_____ _____

We are committed to a continuing program of product improvement.
Specifications, appearance, and dimensions described in this manual are subject to change without notice.

DCN No. _____
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Shipping Info

Unpacking and Inspection

You should inspect your granulator for possible shipping damage.

Thoroughly check the equipment for any damage that might have occurred in transit, such as broken or loose wiring and components, loose hardware and mounting screws, etc.

In the Event of Shipping Damage

According to the contract terms and conditions of the Carrier, the responsibility of the Shipper ends at the time and place of shipment.

Notify the transportation company's local agent if you discover damage.

Hold the damaged goods and packing material for the examining agent's inspection. **Do not return any goods before the transportation company's inspection and authorization.**

File a claim with the transportation company. Substantiate the claim by referring to the agent's report. A certified copy of our invoice is available upon request. The original Bill of Lading is attached to our original invoice. If the shipment was prepaid, write us for a receipted transportation bill.

Advise customer service regarding your wish for assistance and to obtain an RMA (return material authorization) number.

If the Shipment is Not Complete

Check the packing list as back-ordered items are noted on the packing list. You should have:

- ☑ Granulator
- ☑ Bill of lading
- ☑ Packing list
- ☑ Operating and Installation packet
- ☑ Electrical schematic and panel layout drawings
- ☑ Component instruction manuals

Re-inspect the container and packing material to see if you missed any smaller items during unpacking.

If the Shipment is Not Correct

If the shipment is not what you ordered, **contact the shipping department immediately**. For immediate assistance, please contact the correct facility located in the technical assistance section of this manual. Have the order number and item number available. *Hold the items until you receive shipping instructions*.

Returns

Do not return any damaged or incorrect items until you receive shipping instructions from the shipping department.

Credit Returns

Prior to the return of any material, **authorization** must be given by **the manufacturer.** A RMA number will be assigned for the equipment to be returned.

Reason for requesting the return must be given.

ALL returned material purchased from **the manufacturer** returned is subject to 15% ($75.00 minimum) restocking charge.

ALL returns are to be shipped prepaid.

The invoice number and date or purchase order number and date must be supplied.

No credit will be issued for material that is not within the manufacturer's warranty period and/or in new and unused condition, suitable for resale.

Warranty Returns

Prior to the return of any material, authorization must be given by **the manufacturer.** A RMA number will be assigned for the equipment to be returned.

Reason for requesting the return must be given.

All returns are to be shipped prepaid.

The invoice number and date or purchase order number and date must be supplied.

After inspecting the material, a replacement or credit will be given at **the manufacturer's** discretion. If the item is found to be defective in materials or workmanship, and it was manufactured by our company**,** purchased components are covered under their specific warranty terms.

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Chapter 1: Safety

1-1 How to Use This Manual

Use this manual as a guide and reference for installing, operating, and maintaining your granulator. The purpose is to assist you in applying efficient, proven techniques that enhance equipment productivity.

This manual covers only light corrective maintenance. No other maintenance should be undertaken without first contacting a service engineer.

The Functional Description section outlines models covered, standard features, and safety features. Additional sections within the manual provide instructions for installation, pre-operational procedures, operation, preventive maintenance, and corrective maintenance.

The Installation chapter includes required data for receiving, unpacking, inspecting, and setup of the granulator. We can also provide the assistance of a factory-trained technician to help train your operator(s) for a nominal charge. This section includes instructions, checks, and adjustments that should be followed before commencing with operation of the granulator. These instructions are intended to supplement standard shop procedures performed at shift, daily, and weekly intervals.

The Operation chapter includes a description of electrical and mechanical controls, in addition to information for operating the granulator safely and efficiently.

The Maintenance chapter is intended to serve as a source of detailed assembly and disassembly instructions for those areas of the equipment requiring service. Preventive maintenance sections are included to ensure that your granulator provides excellent, long service.

The Troubleshooting chapter serves as a guide for identification of most common problems. Potential problems are listed, along with possible causes and related solutions.

The Appendix contains technical specifications, drawings, schematics, parts lists, and available options. A spare parts list with part numbers specific to your machine is provided with your shipping paperwork package. Refer to this section for a listing of spare parts for purchase. Have your serial number and model number ready when ordering.

Safety Symbols Used in this Manual

The following safety alert symbols are used to alert you to potential personal injury hazards. Obey all safety messages that follow these symbols to avoid possible injury or death.

DANGER indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation or practice that, if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation or practice that, if not avoided, may result in minor or moderate injury or in property damage.

Figure 1: Safety Tags and warning features

Hazard Alert Symbol	Description/Explanation	Preventative Maintenance
	High Voltage Hazard. The electrical enclosure is supplied with 3-phase electrical power. Use caution when using or maintaining this product.	Every six months inspect all electrical connections for secure attachment. For further information see the Maintenance Chapter in this manual
	Hands could be exposed to a crushing movement.	Every month inspect the shears/blades for any type of wear. For further information see the Maintenance Chapter in this manual.
	When equipped with belts and sheaves, hands could become entangled.	Every month inspect the belt(s) for any type of wear. For further information see the Maintenance Chapter in this manual.
	Hands can become entangled or cut if they enter the danger zone of gears or cutting shears.	Every month inspect the shears/blades for any type of wear. For further information see the Maintenance Chapter in this manual.
	The unit can produce continuous noise above 85 dBA and/or produce projectiles under normal operating conditions.	Always wear eye and ear protection when the machine is in operation or performing maintenance.

Mandatory Symbol	Description/Explanation
	Read Operators Manual. This equipment must be operated and maintained by properly trained personnel. The information contained within this manual must be read and understood prior to operating this equipment.
	Lock Out. This equipment is operated with 3-phase electrical power. Therefore, when performing any maintenance operations we recommend following the local standards for performing a lock-out/tag-out procedure.
	Wear Safety Gloves. This equipment operates with sharp blades and rotors. We recommend that technicians use safety gloves while performing maintenance to protect hands from being exposed to these sharp surfaces.
	Wear ear and eye protection. This unit may produce loud and continuous noise and may produce projectiles.
	Do not reach into unit. Reaching into a unit is prohibited while the unit is in operation and may cause serious injury.

1-2 General Safety Regulations

⚠WARNING

This machine uses knives for the performance of its intended use. Consequently, it can be a dangerous machine to operate and maintain unless these safety regulations are followed.

These regulations should be read, understood, and periodically reviewed by all personnel involved in any way with this machine.

Never operate the machine or jog the motor unless the cutting chamber's covers, discharge chute, and guards are in place and secure. Do not circumvent the safety interlocks.

Never operate the machine or jog the rotor unless the cutting chamber covers, discharge chute, or any guards or covers are in place and secure. Do not circumvent the safety interlocks.

Prior to clearing a jam or performing any maintenance, the motor should be turned off and electrically locked out. Be sure that the rotor has come to a stop. Hands must not be inserted into the machine to clear the jam.

Do not extend any part of the body into feed roll openings or discharge area unless the motors are electrically locked out and the rotor and feed rolls are motionless.

Never extend fingers through holes in the screen.

Be sure that the v-belts are properly aligned and that tension is at its maximum.

Extreme care should be taken to see that all bolts are properly tightened at all times. During the operation of the machine, rotor knife bolts may come loose. Although fine threads are used on the rotor knife, you should inspect the tightness of the bolts frequently.

This machine is designed for the granulation of plastic materials. Do not feed any other materials into the machine.

1-3 Responsibility

⚠CAUTION

These machines are constructed for maximum operator safety when used under standard operating conditions and when recommended instructions are followed in the maintenance and operation of the machine.

All personnel engaged in the use of the machine should become familiar with its operation as described in this manual.

Proper operation of the machine promotes safety for the operator and all workers in its vicinity.

Becoming familiar with materials, inspection, speed limitations, screens, and guard maintenance, and total user responsibility will assist you in learning potential areas in need of observation for danger.

Each individual must take responsibility for observing the prescribed safety rules as outlined. All caution, warning and danger signs must be observed and obeyed. All actual or potential danger areas must be reported to your immediate supervisor.

1-4 Warnings and Precautions

⚠CAUTION

Our granulators are designed to provide safe and reliable operation when installed and operated within design specifications, following national and local safety codes.

To avoid possible personal injury or equipment damage when installing, operating, or maintaining this granulator, use good judgment and follow these safe practices:

- ☑ **LEARN AND OBEY** your company's safety policy regarding granulating equipment.
- ☑ **MOVING OR LIFTING THE GRANULATOR:** Although our equipment is built and engineered for great ruggedness in operation, care must be taken when moving the machine along the floor or lifting it. Damage may occur to sheet metal covers, electrical cabinets, or small brackets if pressure is applied to them when moving the granulator. When lifting the granulator, be certain of total machine weight and the capability of the lifting equipment. (See the Granulator Specification Sheets for machine weights and dimensions.)
- ☑ **GRANULATOR LOCATION:** Adequate area for routine maintenance should be provided in order to open the machine for knife, screen, or cleanout service. Proper service area clearances also should allow people who are working on the machine to be clearly visible to others, thereby reducing potential safety hazards.
- ☑ **SAFE HOUSEKEEPING:** The work area must be kept clean and uncluttered during periods of operation or maintenance. No hand tools or other metal objects should be left on or around the machine. Any tools or other metal objects that mistakenly fall into the hopper feed opening can cause severe damage to the internal cutting chamber, rotor and screen components.

- ☑ **SAFETY GLASSES OR A FACE SHIELD MUST ALWAYS BE WORN** when servicing or operating the machine. Although our machines are designed for the maximum in fly back control, caution must be used when operating near the hopper feed opening in order to guard against unexpected material fly back.

- ☑ **EAR PROTECTION** may be required when operating the machine during granulation of very hard or noisy materials. The Occupational Safety and Health Act of 1970 has established guidelines for Permissible Noise Exposures (OSHA 1910.95) that should be followed.
- ☑ **NEVER** attempt to operate the granulator unless it is fully assembled with all guards and interlocks in place and functional.
- ☑ **OBSERVE** all danger, warning, caution and safety labels on the equipment.
- ☑ Upon completion of any machine maintenance, be certain **ALL SAFETY GUARDS AND COVERS** are securely and properly fastened prior to resuming machine operation. All fasteners must be in place and properly tightened. **ANY SHORTCUTS MAY RESULT IN INJURY TO PERSONNEL OR DAMAGE TO EQUIPMENT.**
- ☑ **NEVER** wear any loose fitting clothes, neckties, or dangling items such as earrings, belts, or shoestrings. Jewelry, such as wristwatches, bracelets, or rings should NEVER be worn. Long hair must be tied back or placed in a tight fitting hairnet. NEVER lean against or rest hands or feet on the granulator when it is in operation or open for maintenance. NEVER stand on the granulator when it is in operation.

- ☑ **ROTATION OF MOTORS:** The correct rotating direction for the granulator motor is clearly marked on the machine. Always check for proper rotation of motors. Incorrect rotation direction can cause severe damage.
- ☑ **ELECTRICAL GROUNDING:** All electrical equipment on the granulator must be grounded in accordance to all local codes and Article 250 of the National Electric Code.

- ☑ **ALWAYS DISCONNECT AND LOCKOUT** the main electrical power to the granulator before performing any service.
- ☑ **SAFETY INTERLOCKS MUST NOT BE BYPASSED.** The mechanical and electrical safety interlocks ensure the safety of personnel. They should never be tampered with or removed for ANY reason. They should be checked frequently by a qualified mechanic for proper operation.
- ☑ **NEVER** modify the machine configuration or any individual component without written notice from the factory.

For further information on granulator safety, installation and operation, see the *American National Standard for Plastics Machinery—Granulators, Pelletizers, and Dicers Used for Size Reduction of Plastics—Construction, Care, and Use*. ANSI B151.11-1982.

We have long recognized the importance of safety and have designed and manufactured our equipment with operator safety as a prime consideration. We expect you, as a user, to abide by the foregoing recommendations in order to make operator safety a reality.

Chapter 2: Functional Description

2-1 Models Covered in This Manual

This manual provides the necessary instructions for the installation, set-up, and maintenance of our 6.5 x 8, 6.5 x 12, and 6.5 x 16 granulators, which include models: Seven Series, 65 Series, 6.5 Series and M65 Series.

2-2 General Description

This granulator has been designed to uniformly and consistently reduce your scrap in size. It has been engineered to consistently deliver clean granulate with a minimum of fines.

The 6.5” granulators provide efficient and versatile granulation for a variety of applications. They can be used with robot feed, conveyor feed, or hand feed operations. They are ideal for injection-molded runners and reject parts; small blow-molded parts and tops-tails; small extruded tubes and profiles; and edge trims from sheet extrusion.

Motors are individually fused for maximum protection in compliance with the National Electric Code. The control enclosure houses all of the necessary wiring, fuses, overload heaters, and motor starter coils, along with the 115V control transformer and granulator operating controls. The control enclosure is built to meet NEC regulations and also contains a fused disconnect switch.

2-3 Typical Features and Components

Hopper

The hopper is an upright enclosure bolted to the top of the cutting chamber. The hopper is designed to facilitate the feeding of material to the rotary knives and to protect the operator from material that may be thrown out.

Cutting Chamber

The rotor, on which the cutting knives are mounted, is a fabricated steel unit supported by bearings mounted outside the cutting chamber. The slanted rotor knives produce a scissors cutting action, which reduces the possibility of feedstock jamming in the cutting chamber.

Drive System

The rotor is indirectly driven by the motor through timing belts. The motor shaft pulley, belts, and the rotor shaft pulley are shielded by safety guards. The 6.5” granulators come with a self-tensioning device that constantly adjusts and idle, eliminating the need to tension the belt.

Discharge System

The granulated material is collected by a discharge chute beneath the cutting chamber and directed into a large capacity vacuum bin. A compressed air venturi system is also available.

Base

The base is caster-mounted, with four swivel casters for easy positioning. An optional super-low base is available for under-the-press applications, and a high base is available with a larger capacity bin and valve sack discharge.

2-4 Safety Features

Safety Switches

Safety switches at all access covers are wired into the starter control circuit. The machine cannot be started when these parts are open. However, for safety purposes, the machine should be disconnected from the power lines by a disconnect switch or by removing the plug from its receptacle. Check all safety switches periodically for proper operation. See Figure 2 for location of the safety switches.

Safety Tags

A set of metal plates are attached to the machine to warn of potential danger.

Magnetic Starter

The granulator is equipped with a magnetic starter that is protected by manually resettable overload heaters.

Sound Enclosure

An optional sound enclosure reduces operating noise levels to 75-80 dBA.

Figure 2: Safety Switches and Interlocks

Chapter 3: Installation

3-1 Uncrating the Equipment

⚠CAUTION

The granulators are shipped mounted on a wooden skid, then blocked and banded to prevent movement. All non-painted items subject to corrosion are coated with a quality rust preventative and the machine is then covered with heavy-duty polyethylene to protect it from moisture and dirt. Refer to the Appendix for detailed dimensional data and pertinent weights.

Prepare in advance the site you have selected for installation of the granulator. Be certain that the area to be occupied by the machine is clean, level, and free of obstructions. The machine should be set on a concrete floor, and care must be taken when moving the machine across a hollow timber floor, so that the point loading of the casters does not cause damage. The site you have selected must have a floor rating to adequately support the weight of the machine. If necessary, use steel shims to level the machine.

Locate the machine so that access is given to electrical components, screen, and hopper. Maintenance personnel should have unobstructed access to the units on which they will be working.

To avoid squeezing people working near a machine, there should be adequate clearance maintained between machines, walls, or partitions. Hinged doors and covers should have full swing. Restrictions may force work in cramped quarters. An off-balance operator with an awkward reach into a partially obscured area is unsafe.

If inspection after shipment has revealed no shipping damage, unpack the unit by removing all hold-downs, tie-downs, bolts, nuts, etc. Remove the envelope with the electrical schematics and instruction manual from the base evacuation area.

You can now have the machine lifted from the skid. To lift and move the granulator safely and correctly, cover any sharp corners or edges, and use the type of equipment that has the most appropriate features and capacity. Use the designated lifting points, and do NOT lift the machine by the hopper handles or guards.

3-2 Electrical Connections

⚠CAUTION

Check serial tag voltage/amperage requirements and make sure your electrical service conforms before making any electrical connections. Make sure that all three phases are wired correctly.

Bring properly sized power leads and grounds from a fused disconnect to the unit. Provide external overcurrent protection to the unit, using circuit breakers or fuses. If you use fuses, make sure that they are dual-element, time-delay fuses, sized according to your electrical code. Refer to the technical specifications in the Appendix for horsepower, voltage, phase, and frequency requirements to determine the size and rating of the supply cable required.

Carefully check the diagrams packed with the machine. All internal wiring has been done at the factory. All safety interlocks have been verified to be functional before shipment. The only connection left to be made is the electrical power source to the machine at the control enclosure. A straight screwdriver is required to open the enclosure door.

Use the following procedure to complete the electrical connections:

1. Check to be certain that the starter heater elements correspond with the motor requirements. If controls are not supplied, the limit switches supplied on the machine must be wired into the circuit at the common terminal box.
2. Check that the limit switches are closed.
3. Turn switch ON at main power supply.
4. Jog the motor by pressing the START and then the OFF button. This starts and stops the motor.
5. With the electrical power ON, check that the motor rotates in a clockwise direction at the viewing port in the belt guard. If motor rotation is correct, continue to the next step. If rotation is incorrect, complete the following procedure:
    a. Shut power OFF and disconnect incoming power supply.
    b. Reverse any two of the three power line connections to the machine.
    c. Re-connect the incoming power supply line and turn ON the main power switch to recheck motor drive rotation.
6. If an airveying system (optional) is fitted, press the Airveyor START button, and check the blower motor rotation. The blower motor should rotate in a counterclockwise direction. If blower motor rotation is correct, continue to step 7. If blower motor rotation is incorrect, complete the following procedure:
    a. Shut power OFF and disconnect incoming power supply line.
    b. Reverse any two of the three power line connections to the blower motor.
    c. Re-connect the incoming power supply line, and recheck the blower motor rotation.
7. Allow all motors to run up to speed for at least 30 seconds.

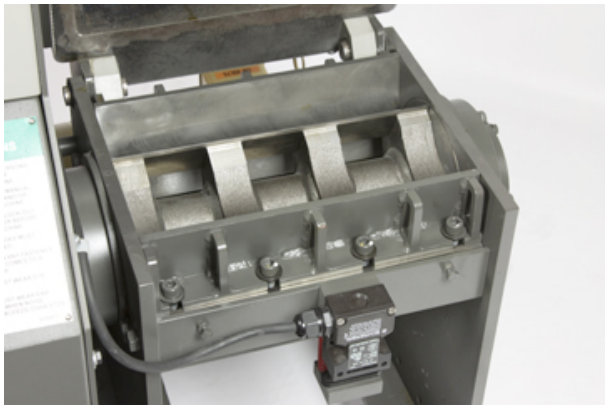
3-3 Accessing the Cutting Chamber

⚠CAUTION

You will need to access the cutting chamber before initial startup and for various maintenance procedures.

Use the following procedure to access the cutting chamber:

1. Turn the main power off, remove the line fuses, and tag the machine as out of service.
2. If the granulator is equipped with the optional sound enclosure, open the front sound enclosure doors.
3. Remove the bin from below the screen.
4. Unscrew the cutting chamber interlock actuator screw. Back the screw out as far as it will go. When unscrewed, the interlock will still be captive on the door to prevent loss.
5. Carefully guide the screen cradle to its resting position, and remove the screen.
6. From the backside of the granulator, pull the hopper towards you until it comes to a stop.



3-4 Closing the Cutting Chamber

⚠CAUTION

After completing any maintenance or adjustments inside the cutting chamber, use the following procedure to close the cutting chamber and resume use of the granulator:

1. Carefully tilt the hopper forward to its upright position.
2. Replace the screen in the screen cradle, and carefully raise the screen cradle.
3. Tighten the cutting chamber interlock screw as far as it will go.
4. Replace the bin below the screen, and close the sound enclosure doors if applicable.
5. Replace line fuses, turn power on, and remove the out of service tag from the machine.

3-5 Initial Start-up

This machine has been run under power and tested at the factory prior to shipment. The necessary settings and adjustments have been made so that a minimum amount of setting up or re-adjustment is required when starting up the machine in its new location.

With all electrical, mechanical connections and lubrication requirements having been attended to, the following start-up steps should be carefully carried out before attempting to place any material into the infeed hopper. Use the following procedure to prepare the machine for initial start-up:

⚠WARNING

Before operating the granulator, ensure that the granulator has been correctly assembled and wired.

1. Access the cutting chamber as describe in Section 3-3 on page 18.
2. Thoroughly clean the rust preventative materials or grease from the hopper, the inside of the cutting chamber, knives, rotor, screen, discharge system, and exterior of the machine. Do not use solvent on any of the painted areas, as solvent may damage the paint.
3. Check all rotor knives to make sure they are properly seated on the rotor and securely fastened. Although they are ground as a set, one knife will probably be .001” to .002” higher than the others. This should be marked and used when adjusting the bed knives for proper clearance.
4. Use a feeler gauge to check the clearance between the rotor and the bed knives by turning the rotor backwards. Rotating the rotor backwards gives a better feel and does not cut the gauge, should the knives be too close. Check the knives on each end only. Proper clearance is 0.15 mm (0.006”). This clearance is slightly greater at the center of the knives.

NOTICE

Recheck knife clearance after the first 24 to 36 hours of operation.

5. To make the adjustment on the bed knives, the bed knife adjusting screws should be hand tightened to hold the knife firmly against the knife seat while adjusting the knife forward using push and pull screws. After the clearance is set, torque the screws according to the table in Section 7-3 on page 32.
6. With the exposed parts of the machine thoroughly clean, and all knife clamping bolts securely fastened, close the cutting chamber as described in Section 3-4 on page 18.

NOTICE

After initial start-up, the rotor knife retaining screws should be checked after 8 hours running to be assured that the proper torque is maintained. Thereafter, rotor knife retaining screws should be checked weekly.

NOTICE

The rotor must be rotated at least two rotations every 30 days to prevent brinnelling and corrosion of raceways.

Chapter 4: Operation

4-1 Start-up

Before starting the machine, check that the rotor rotates freely by rotating it by hand. Inspect the cutting chamber carefully to insure that nothing has fallen into it. Make sure all screws and bolts are properly secured. Check all electrical connections and motor rotations. See Chapter 3 on pages 16-18 for detailed set-up instructions. Allow all motors to run up to speed for at least 30 seconds.

The cutting chamber knives are extremely sharp. Always wear heavy gloves and exercise care when working in the cutting chamber.

4-2 Feeding the Granulator

Feed the granulator through the opening in the hopper. The method of feeding the granulator depends on the physical form and nature of the material being processed.

For maximum efficiency, the granulator should be fed at a rate that is consistent with its capacity; i.e., if the granulator is rated at 60 kg/hr (132 lbs./hr.), then the general feed rate is 1 kb/min. (2.2 lbs./min.). Under these operating conditions, the correct proportions of cut and uncut particles will be present in the cutting chamber.

Under no circumstances should the operator attempt to reach into the hopper to dislodge any bridged or jammed material while the granulator is in operation. To clear the hopper of bridged or jammed material, the machine main power must be turned off and the machine isolated.

4-3 Clearing a Jammed Cutting Chamber

Never attempt to free a jammed machine by placing hands on the rotor, rotor knives, or inside the cutting chamber. Hands must be kept clear of the rotational path of the rotor knives.

Good footing on a clean floor is essential and the body should be well braced to guard against loss of balance should the jam suddenly come free. Use the following procedure to clear a jammed cutting chamber:

1. Disconnect and lock out power.
2. Be certain that the rotor is motionless.
3. Access the cutting chamber as describe in Section 3-3 on page 18.
4. Use a pry bar to exert force on the rotor, usually in the direction opposite normal rotation. A leather mallet and a block of wood of sufficient length can be used to keep hands away from the path of the knives.
5. Use pliers to remove material from the cutting chamber, keeping in mind that the removal of material may cause rotation of the rotor and rotor knives.
6. After clearing the jam, be certain that the screen and all guards and covers are secured in place before connecting power and starting the machine.

4-4 Shut-down

Use the following procedure to properly and safely shut down the machine:

1. Stop all feeding of material.
2. Allow the granulator to run until the cutting chamber is completely empty.
3. Press the drive motor “stop” button. This shuts off the rotor drive motor.
4. After the granulator has stopped, press the airveyor stop button (if applicable) located at the blower motor.
5. Turn the main power switch to off.

NOTICE

For emergency machine stops, feedstock must be cleaned out of the hopper and cutting chamber prior to restarting the machine.

Chapter 5: Maintenance

5-1 Preventative Maintenance Schedule

Check	Frequency
Check tightness of cutting chamber interlock screw	Daily
Do housekeeping around work area	Daily
Check knife clearance and wear. (Refer to Section	Weekly
Check that rotor and bed knife bolts have proper torque (Refer to Section 7-3 on page 32)	Weekly
Check lubrication. More frequent lubrication may be required (Refer to Section 5-3 on page 22)	Monthly

5-2 Testing the Interlock Switch

The cutting chamber interlock switch ensures that the granulator cannot be running when the hopper or screen cradle are open. When disengaged, the interlock opens the electrical control circuit to the motor and prevents the machine from running.

To test the interlock switch, unscrew the cutting chamber interlock screw while the granulator is on. The granulator should stop. If the granulator does not stop, the interlock is not working. If the interlock does not work, the complete mechanism, including the switch, must be removed and disassembled to determine the cause of the malfunction.

5-3 Lubrication Requirements

All beside-the-press granulators and accessories are supplied with bearings that are pre-lubricated at the factory.

Having the bearings mounted external to the cutting chamber results in low maintenance and trouble-free operation.

The bearings used require a high quality, lithium-based EP (extreme pressure) type of grease, which conforms to the NGLI Grade 2 consistency. This grease has been chosen due to its suitability for use in heavy-duty applications under heavy shock loads. It also contains rust inhibitors, has high temperature stability, and exhibits good water resistance.

Bearings should be lubricated with care. Too much grease applied to the bearings at one time can rupture bearing seals. Under normal operating conditions, a moderate amount of grease applied every 2,000 hours should be adequate to ensure long life. Severe operating conditions require more frequent lubrication intervals.

5-4 Servicing the Drive Belts

This granulator comes equipped with a self-tensioning device that constantly adjusts an idle, eliminating the need to tension the belt.

Use a straightedge to verify that the alignment of the pulleys is correct.

5-5 Replacing and Adjusting the Knives

The rotor and bed knives are subjected to severe conditions, and you should inspect knives periodically for sharpness. The sharper the knives are kept, the better the machine operates, producing quality regrind. If the knives become severely rounded, chipped, or otherwise damaged, the granulator experiences heavy shock loads during operation causing additional and significant reduction in knife life.

⚠WARNING

Exercise extreme care when rotating the rotor and handling knives.

Rotor Knives

We recommend that the rotor knife screws be replaced with new screws every sixth knife change to reduce the risk of screw failure due to overstretching. Screws must be replaced with the type specified in the spare parts list. Use the following procedure to replace or adjust the rotor combs:

⚠CAUTION

Rotor knives should be changed one seat at a time to prevent rotor from being rotated in an out-of-balance condition.

1. Access the cutting chamber as directed in Section 3-3 on page 18.
2. Set back the bed knives to clear the rotor knives so that the rotor can revolve freely.
3. Carefully block the rotor with a piece of wood to prevent it from turning.
4. Loosen and remove the rotor knife screws and carefully remove all rotor knives. Make sure you have solid footing while you apply the breaking force.
5. Thoroughly clean the knife seats with a stone or other non-marring tool, and wipe the screws with a lightly oiled cloth. Do not leave an oil film on the screws, as lubrication can adversely affect the stress on a screw installed to a fixed torque value.
6. Re-install the rotor knives onto the rotor.
7. Lightly tighten the screws and check that a 0.03 mm (0.0015”) feeler gauge will not pass between the back of the knife and the knife seat. Tap the knife gently with a rawhide hammer if necessary to close the gap.
8. Tighten the screws evenly and torque the screws according to Section 7-3 on page 32.
9. Re-check the gap between the back of the knives and the knife seats. If necessary, readjust the knives.
7. Adjust the clearance between the bed knives and rotor knives. (See “Bed Knives” on page 24.)

Bed Knives

Use the following procedure to replace or adjust the bed knives:

1. Access the cutting chamber as directed in Section 3-3 on page 18.
2. Loosen the fasteners holding the bed knives, shims, and clamps, working from the knife edges inward to the center. Note the relative position of each part before it is removed.

NOTICE

As the last screw is backed out, the knife clamp, knife, and shim will require some support to prevent them from moving.

3. Thoroughly clean the knife seats with a stone or other non-marring tool, and wipe the screws with a lightly oiled cloth. Do not leave an oil film on the screws, as lubrication can adversely affect the stress on a screw installed to a fixed torque value.
4. Install the new or re-sharpened bed knives and clamps. Make sure the knives are fully back against the knife adjusting screws and loosen the adjusting screw checknuts slightly. Do not torque the socket cap screws fully at this point.
5. Use the adjustment screws to set the knife clearance to 0.15 mm (0.006”). The clearance should be measured with a feeler gauge at the ends of the knife, by rotating the rotor sheave backwards by hand. The clearance is slightly greater at the center of the knives. Check both the upstroke and downstroke knife gaps.

NOTICE

Adjust the knife gradually from end to end. Adjusting one side completely and then the other side will cause the adjusted side to tip slightly.

6. Tighten all of the mounting screws according to Section 7-3 on page 32, and re-check the knife gap.

5-6 Sharpening the Knives

Under normal operating use, the cutting edge of the knives will eventually become dulled, resulting in reduced cutting efficiency. The blunt knives may either be re-ground to restore the cutting edge, or replaced with new knives when regrinding is not possible.

NOTICE

The minimum dimensions given for the rotor knife and bed knife cannot be combined to produce a cutting combination. For example, a bed knife ground to its minimum dimension cannot be combined with a rotor knife that is also ground to its minimum dimension.

Rotor Knife Sharpening

The rotor knife can be re-sharpened to the diagram below. The three knives must be sharpened to within 0.076 mm (0.003") of each other. Greater dimensional variations will cause difficulty when setting the knife gap and create other serious complications.

When sharpening, it is not harmful to allow a few small nicks to remain in the cutting edge. Grinding the cutting edge until perfectly clean can sometimes be wasteful.

Do not install rotor knives that are smaller than the minimum dimension shown, because the fasteners that secure these knives will interfere with the cutting circle. If the rotor cannot turn, the bed knives will be damaged.

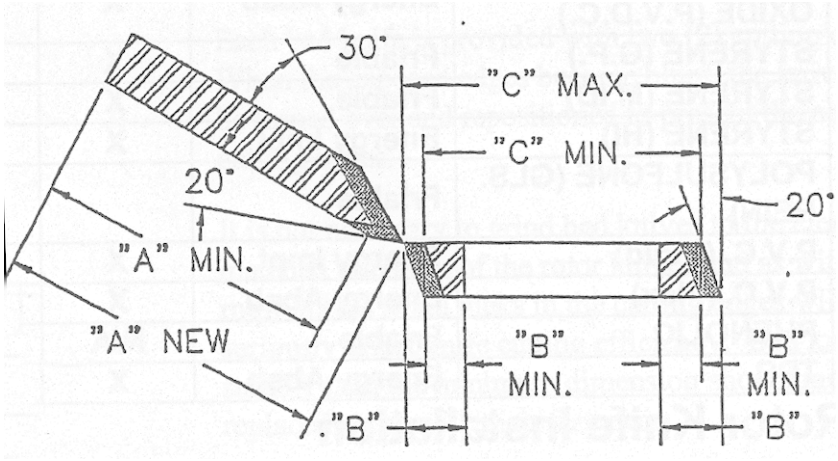
Use Figure 4 on page 26 to determine the correct type of rotor knife.

Bed Knife Sharpening

Each bed knife is provided with two cutting edges. When the exposed edges become blunt, the knives can be turned and repositioned to present the new cutting edges. When re-sharpening is necessary, refer to the diagram below.

It is not necessary to grind bed knives to the closely matched tolerance of rotor knives. As with rotor knives, small nicks in the cutting edges will not seriously affect knife cutting efficiency. Bed knives that are smaller than the minimum dimensions shown must be replaced along with the fasteners that secure them.

Figure 3: Knife Sharpening Specifications



Rotor Knife 50° Land	
"A" New	"A" Min.
1.968"	1.765"

Bed Knife			
"B" New	"B" Min	"C" Max	"C" Min
0.354"	0.234"	1.850'	1.610"

Figure 4: Recommended Knife Replacement Blades

Material	Physical Material Quality	D2	
		High Shear	50º
ABS (High Impact)	Energy Impact		X
ABS (Med. Impact)	Energy Impact		X
ABS (Low Impact)	Energy Impact	X	
Acetyl	Energy Impact		X
Acrylic	Energy Impact	X	
Nylon (non-filled)	Energy Absorption	X	
Nylon (filled)	Friable	N/A	N/A
Polybutylene	Energy Absorption	X	
PET (Bottles)	Energy Impact	X	
PET (Preform)	Energy Impact	X	
Polyethylene (PE. Low)	Energy Absorption	X	
Polyethylene (PE. Med.)	Energy Absorption	X	
Polyethylene (PE. High)	Energy Absorption	X	
E.V.A.	Energy Absorption	X	
Polypropylene (P.P.)	Energy Absorption	X	
Polypropylene Oxide (P.V.D.C)	Energy Absorption	X	
Styrene (G.P.)	Friable	X	
Styrene (M ID)	Friable	X	
Styrene (HI)	Energy Impact	X	
Polysulfide (GLS. REIN)	Friable		X
P.V.C. (Rigid)	Energy Impact	X	
P.V.C. (Flex)	Energy Absorption	X	
Phenolic	Friable	N/A	N/A
TPR	Energy Absorption	X	

Chapter 6: Troubleshooting

6-1 Introduction

⚠CAUTION

The utmost in safety precautions should be observed at all times when working on or around the machine and the electrical components. All normal trouble-shooting must be accomplished with the power off, line fuses removed, and with the machine tagged as out of service.

The use of good quality test equipment cannot be over-emphasized when troubleshooting is indicated. Use a good ammeter that can measure at least twice the AC and DC current that can be encountered for the machine. Be sure that the voltmeter has at least minimum impedance of 5,000 OHMS-per-volt on AC and 20,000 OHMS-per-volt on DC scales. Popular combination meters, VOM and VTVM can be selected to provide the necessary functions.

Before making haphazard substitutions and repairs when defective electrical components are malfunctioning, we recommend that you check the associated circuitry and assemblies for other defective devices. It is common to replace the obviously damaged component without actually locating the real cause of the trouble. Such hasty substitutions will only destroy the new component. Refer to wiring diagrams and schematics.

Locating mechanical problems, should they occur, is relatively straightforward. When necessary, refer to the parts catalog section.

6-2 Electrical Faults

Problem	Possible Cause	Possible Remedy
Motor Fails to Start	Supply failure	Check fuses
	Starter inoperative	Check main supply
	Starter overloads or cuts out	Check motor requirements and adjust accordingly
	Safety switches inoperative	Check and adjust as needed
Motor starts but will not take load	Too much belt tension	Check belt tension and adjust as necessary
	Incorrectly connected motor	Check terminal connection with manufacturer's connection diagram and adjust as necessary
	Defective starter winding	Check current in each phase with ammeter, if there is a marked difference in current in one phase, contact motor manufacturer
Motor will start when disconnected from load but not when connected	Worn bearings	Check and replace if necessary according to manufacturer's literature

6-3 Processing Faults

Problem	Possible Cause	Possible Remedy
Stalling	Overfeeding	Reduce feed rate
	Partial or complete screen blockage	Remove screen, clear and inspect for damage
	Insufficient tension on v-belt drive causing belt slip and burning	Check tension of the belt and adjust as necessary
		Check that the motor slide base screws are secure
	Badly blunted or damaged knives	Fit re-sharpened or new knives as required
	Knife setting too wide	Check clearances given and adjust as required
	Installation fault; motor running in reverse direction	Check with direction arrow and re-fit electrical connections to give the correct direction
	Safety switch cut out where fitted	Tighten safety switch setting screw
Material overheating	Check all possible causes under “stalling”	Remedy as shown above
	Screen size too small	Increase screen size
	When granulating rubber, insufficient talc causes freshly cut surfaces to re-adhere	Increase talc percentage rate of infeed
	Blockage in airveyor	Check direction of fan rotation, check venturi and line or chute for blockage

6-4 Mechanical Faults

Problem	Possible Cause	Possible Remedy
Bearing overheating	Excessive tension on the belt drive	Check tension of belt and adjust as necessary
	Lubrication fault	Check lubrication frequency and recommended lubricant
Visible cracks in knife	Incorrect grinding or grinding procedure	Check method of grinding and contact our technical sales department
Knives moving on knife seats	Uneven knife seat surfaces	Clean up to provide maximum bearing surface
	Loose knife screws	Knife screws should not be used more than six times. Replace if there is evidence of stretch
Knives breaking	Cracks caused by incorrect grinding	Contact our technical sales department
Excessive knife wear	Open knife setting	Re-set knives
Screen breakage	Incorrectly seated screen	Check that the screen is seated correctly and fully in its cradle

Chapter 7: Appendix

7-1 Technical Specifications

Features

Feature	Cutting Chamber Size		
	6 .5 x 8	6 .5 x 12	6.5 x 16
Open Screen Area (sq. in.)	39	55	70
Average Throughput (lbs./hr.)	100	150	200
Bin Capacity (cu. ft.)	0.15	0.20	0.30
Machine Weight (lbs.)	510	530	550
Dimensions (in.) H	51.2	51.2	51.2
W	20.5	24.5	28.5
D	27.5	27.5	27.5

Specifications

	Standard	Standard Options
Infeed	Multi-feed hopper, double wall	Hopper extensions for high-drop applications
Cutting Chamber	2 counter-slant bed knives, drop down screen cradle	Wear resistant components, sound enclosure
Rotor	3 knife open rotor, scooped wings, slant cut knives	Staggered knife, open rotor with wedge held “cassette knives”, wear resistant components
Rotor Knives	D2 HCHC Heat treated	
Bed Knives	D2 HCHC Heat treated	
Screen	3/16”	1/4”, 5/16”
Base	Caster-mounted	Super-low for under-the-press, high base with larger capacity bin and valve sack discharge
Discharge	Large capacity vacuum bin	Compressed air venturi system
Motor	3 HP	5HP
Drive Parts	High-inertia flywheel with automatic drive belt tensioning	
Electrical Components	Start/stop push buttons, safety interlocks	
Controls	NEMA Type 12	
Labels	English	Spanish, French
Accessories		

7-2 Recommended Spare Parts List

In order to reduce the amount of downtime required to service a granulator, the following parts should be kept in stock at your facility:

- 1 set of rotor knives and bolts
- 1 set of bed knives and bolts
- 1 screen or set of screens
- 1 set of belts
- 1 set of fuses
- 1 set of motor starter heaters
- 1 cyclone filter bag (optional)

If additional spare parts are required for your granulator, please consult the spare parts department. The serial numbers of the specific components will be required when ordering parts.

7-3 Recommended Torque for Screws

(Grade 10.9 fine thread screws in un-lubricated conditions)

Screw Size	M8	M10	M12	M14	M16	M18	M20	M24
Torque NM.	38	73	135	210	315	460	640	860
Torque Ft. Lbs.	28	54	100	155	232	340	472	810

NOTICE

Threads must be dry. Screw threads should be wiped with an oil-dampened cloth before installation to prevent galling.

7-4 Technical Assistance

Parts and Service Department

The ACS Customer Service Group will provide your company with genuine OEM quality parts manufactured to engineering design specifications, which will maximize your equipment's performance and efficiency. To assist in expediting your phone or fax order, please have the model and serial number of your unit when you contact us. A customer replacement parts list is included in this manual for your convenience. ACS welcomes inquiries on all your parts needs and is dedicated to providing excellent customer service.

For immediate assistance, please contact:

- North, Central and South America, 8am – 5pm CST +1 (800) 483-3919 for drying, conveying, heating and cooling and automation. For size reduction: +1 (800) 229-2919.
  North America, emergencies after 5pm CST (847) 439-5855
  North America email: acsuscanadacustserv@corpemail.com

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